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CLAIMS

What is Claimed is:

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1. A liquid delivery system for horticultural application, comprising:

a controller device electrically connectable to a zone watering control system where the controller is configured to generate and transmit configured fluid control signals to selectively control the flow of pressurized fluid to a plurality of fluid delivery zone; and

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said controller further configured to be electrically connectable to at least one additive injector for introducing said liquid additive into said pressurized fluid flow, said controller being further configured to generate one or more injection control signals to selectively control an injection rate of a liquid additive into said pressurized fluid flow, wherein said injection control signals are generated in accordance with at least a first criteria associated with said fluid control signals.

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2. The system of Claim 1, wherein said at least a first criteria associated with said fluid control signals include at least one of: stored data from a memory structure, instructions entered through a user interface and external data received from at least a first external device.

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3. The system of Claim 2, wherein said stored data includes at least one of:
zone information for each said fluid delivery zone in said liquid delivery system;
geographic information relating to at least a first environmental condition associated with the region in which said liquid delivery system is located;
horticultural information relating to plant types associated with each said fluid delivery zone in said liquid delivery system.

5 4. The system of Claim 3, wherein said zone information includes a flow rate for said each said fluid delivery zone.

 5. The system of Claim 3, wherein said geographic information includes information relating to a least one of: soil types associated with said region, precipitation information associated with said region.

10 6. The system of Claim 2, wherein said external data received from at least a first external device includes at least one of:

 weather related information received from a weather sensor in data communications with said controller; and

 soil related information received from a soil sensor in data communications with said
15 controller.

 7. The system of Claim 1, wherein said injector control signals may be dynamically modified in response to a change detected in said at least a first criteria.

 8. The system of Claim 1, wherein said injector control signals comprise electrical controls for selectively control the rate said additive injector introduces said liquid additive into
20 said pressurized fluid flow.

 9. The system of Claim 8, wherein said electrical control signals comprise at least one of: pulsating electrical signals, analog signals; and digital signals.

 10. The system of Claim 1, wherein said additive injector comprises at least one of: a motor driven pump, and a hydraulic pump.

25 11. The system of Claim 1, wherein said controller is configured to generate a plurality of said control signals to selectively control an injection rate of a plurality of liquid additives into said pressurized fluid flow.

- 5 12. The system of Claim 1, wherein said controller further comprises;
- a first controller for generating said fluid control signals; and
- a second controller adapted to operate in conjunction with said first controller to generate
- said injection control signals, wherein said second controller is in data communication with said
- first controller.

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5 13. A controller for a horticultural watering system, said controller comprising:

 a microcontroller device configured for generating a plurality of output signals, wherein the plurality of output signals include a first output signal a first portion selectively directed to a plurality of zone control devices for controlling the flow of pressurized fluid to individual zones of said watering system and a second output signal selectively directed to an injector apparatus

10 for controlling the injection rate of an additive to said pressurized fluid;

 an interface device in communication with said microcontroller device, said interface device configured to receive information relating to fluid dispensation from one or more external sources;

 a memory device in communication with said microcontroller device for storing the
15 information relating fluid dispensation employable in generating the plurality of output signals;
and

 wherein said microcontroller device utilizes the information relating to fluid dispensation to generate said plurality of output signals.

 14. The controller of Claim 13, wherein said interface device comprises a user
20 interface for allowing a user to manually enter information for use in generating said plurality of signal outputs.

 15. The controller of Claim 14, wherein said use interface is further configured to include at least one display for displaying information relating to an operational status of said watering system.

25 16. The controller of Claim 15, wherein said at least one display is configured to display a plurality of user selectable options associated with said watering system, wherein said

5 user selectable options are utilized by the microcontroller apparatus to generate said plurality of output signals.

17. The controller of Claim 13, wherein said interface device comprises a data input port for electrically connecting to the one or more external sources.

10 18. The controller of claim 13 wherein the data interface includes at least one of: a keypad device and a card reader.

19. The controller of Claim 17, wherein said data port is configured to receive data signals from at least one of a weather station operable to provide information regarding current weather conditions and a soil sensor operable to provide information regarding current soil conditions.

15 20. The controller of Claim 13, wherein said memory structure comprises at least a first database for storing second information related to at least one:

said additive;

geographic information relating to the a geographic region in which said watering system is located; and

20 horticultural information relating to plant varieties said watering system waters.

5 21. A method for controlling injection of a liquid additive into a horticultural liquid dispensation system, comprising the steps of:

sequentially identifying a zone in said watering system;

accessing a memory structure to retrieve zone information related to said zone;

processing said zone information retrieved for said zone to,

10 first generating a fluid flow control signal to control the flow of pressurized fluid to said zone; and

 second generating an injector control signal to control the injection rate of an additive into said flow of pressurized fluid; and

 transmitting said fluid flow control signal and said injector control signal to a flow
15 control device and a injector device, respectively.

22. The method of Claim 21, wherein said first and second generating steps are performed concurrently.

23. The method of Claim 21, further comprising:

 receiving at least one data input from a data interface, wherein said data input is
20 processed in combination with said zone information to generate said injection control signal.

24. The method of Claim 23, wherein said at least one data input is received from a user interface, wherein a user enters said at least one data input.

25. The method of Claim 23, wherein said at least one data input is received from a sensor external to said watering system.

25 26. The method of Claim 24, wherein said data input is received from at least one of;
a weather station; and
a soil sensor.